

A SOURCE OF WEALTH

Black Sands Found to Be of Great Value.

PRECIOUS PACIFIC PLATINUM

How Electric Smelters May Develop Western Industries.

NUGGET AS BIG AS SUPERIOR

What Uncle Sam's Expert, Dr. David

T. Day, Has to Say About Waste

Product Values.

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Within the past year experiments have been made which will revolutionize placer mining all over the world, and add millions to the wealth of the United States. They may build up a manufacturing industry on our Pacific slope, and populate regions in the northwest which are now as wild as any part of the Rockies. Based upon them, syndicates are already forming and they will give small or large fortunes to a great number of people. I refer to the experiments which, at the direction of Congress, the geological survey has made and is making as to the minerals found in black sand.

Fortunes in Black Sand.

Every miner knows what black sand is. It is the heavier particles which come from the wearing away of rocks containing certain minerals. All sand comes from rock and the greater part of it from quartz. The quartz sands are white or light brown in

color. They are found on our Atlantic shores, and are scattered here and there all over the country. There are many of them in the west, but there, mixed with them and often in great beds apart from them, are found deposits of black sand. There is so much of this black stuff along the Pacific coast that the seashore is dark and not white when viewed from the ocean.

It is a sand of a dark color, and is found in great quantities on the Pacific coast down to San Diego. As one comes closer shore he often sees great masses of black rocks and headlands, the latter made up of layers of black and white sand, one running through the other somewhat like marble cake. These headlands sometimes result from the dropping of the shore, through an earthquake, somewhat like that of San Francisco.

This black sand is also found along the big western rivers. Columbia has many such deposits, and the Snake river is especially rich. Black sand is to be found in every mineral region, and it is more or less connected with every placer mine. When Director Walcott began to investigate the subject he sent out letters to eight thousand placer miners, and asked each to send him a little bag of this black sand with which he was working. More than a thousand of the miners responded and the samples came from thirty-five different states and territories, including the Appalachians and the Rockies and all parts of the Pacific coast even to Alaska. The samples were analyzed and assayed for the gold and platinum they contained, and also for the numerous other minerals in the black sand. As a result of the assays and the experiments made in the reduction of these sands, at the Portland exposition, it is known that they can be made of enormous value to the country, and that they may bring in millions of dollars of a product every year.

Dr. David T. Day, the chief of the mining and mineral resources division of our geological survey, might well have made the above remark as to his work in the black sands, although he did not. I called upon him at the survey the other day and had a

long chat with him about his experiments. He has been chief investigator of the black sand minerals and the principal discoveries are due to him.

Dr. Day is one of our best known geologists. He has been connected with the survey for almost a quarter of a century, and has been in charge of the government mining exhibits at our national exhibitions from the world's fair at Chicago to Portland. It was at Portland last year that the most important of the black sand experiments were made.

In my talk with Dr. Day I asked him how the investigation originated. He told me it was through a search for platinum, a metal which I have referred to above, as Saul's father's asses, and in the hunt for which he discovered vast quantities of magnetite iron, chrome iron, zircon and rare minerals valuable in the arts. Chrome iron is used in the manufacture of paints, chrome steel and bichromate of potash. Zircon is valuable in making incandescent gas and electric lights, and monazite and other metals for the same purpose. In addition to them Dr. Day found titanium and other things of which I write further on.

The Hunt for Platinum.

The beginning of the hunt was for platinum and it was the direct outcome of the Japanese-Russian war. The chief platinum mines now known to the world are in the Ural mountains on the borders of Siberia. It is from there that the most of the world's supply comes, and the supply is controlled by a trust which furnishes our American markets with platinum at its own prices. When the war broke out our manufacturers were greatly alarmed, and they sent in petitions to Congress to have the geological survey look up platinum in the United States. It was known that the metal existed in small quantities in many localities and the object of the petitions was to have America furnish its own supply of this metal and thus beat the trust. The geological survey asked for an appropriation, and got it, but they worried their request so that the work covered all the metals in the black sand.

Worth More Than Gold.

The results of the investigations have shown that we shall supply a large part of our own platinum, and that our miners in some localities will make a great deal of money from this metal in addition to the gold which is almost always found in connection with it. Platinum is a silvery white metal as hard as iron and very malleable. It is with one exception the heaviest metal in nature, and still it is so ductile and workable that wires have been made of it which are one-twelve-hundredths of an inch in diameter.

This metal is of great value in the arts. It will not amalgamate with quicksilver and it is about the only metal which can be used in carrying the electric current through the glass of the incandescent lamp. Every electric globe or bulb has two fine platinum wires running through the glass by which the electricity goes to the filament within. It is used in all kinds of electrical machinery. It is also used in dentistry and especially for the pins which attach a brand new porcelain tooth to an old snag of a root.

Platinum is used in laboratories for crucibles and other utensils, as it is not attacked by acids, and it is also alloyed with many other metals for various purposes. It has at times been used in Russia for the coinage of high values of money, and indeed, it is almost always worth more than its weight in gold. It is now bringing upward of \$20 per ounce.

A Treasure in Pop Bottles.

Dr. Day tells me that there is a regular search going on along the coast of Oregon for a hidden treasure of platinum, somewhat the same as the hunt for Capt. Kidd's pirate hoard off the coast of the Atlantic. As the story goes, this treasure is contained in six pop or ginger beer bottles.

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which have been filled with platinum and tightly corked. They were buried in the sand, and there are various traditions as to where they are hidden. A bottle the size of the ordinary cigar filled with platinum is worth at least \$100, and those six bottles contain about \$10,000 worth of this most precious of the white metals. Just where they lie no one has yet been able to ascertain, and the hunt goes on. The average placer miner of the west has long known of the existence of platinum in black sand, but he has never made much effort to save it. This has been owing to the ignorance regarding the metal and its value, and also to some unaccountable attempts to dispose of it. Not long ago a miner from Oregon sent to the east three skins of the sea otter and twenty-five pounds of platinum. He got something like \$1,000 a skin for the otters, but only realized \$1 a pound for his platinum. Now he was defrauded I do not know, but at the present prices his platinum should have brought him about \$6,000.

Platinum and Gold.

By the use of the separating tables employed by Dr. Day for getting the metals from the black sand, the grains of platinum and gold are taken out at a cost of a few cents per ton. The platinum which has formerly gone to waste can now be saved, and it will form an important by-product of most placer mines. When found in connection with gold it remains in the sluices with other heavy materials. In panning, it will even stay behind the gold in the pan. It is known by its great weight, its white color, and its resistance to nitric acid. In general platinum grains are smaller than gold grains and large nuggets are rare.

The new experiments with the tables to be used for saving the ore will result in an enormous increase of gold from certain of our placer mines. So far the most of the gold saved has been by means of mercury in sluice boxes. The dirt containing the gold has been washed into these boxes and saved with quicksilver. A great deal of the gold, however, our geologists now find, has never been touched by the quicksilver. It has been coated with copper or other

metals. Dr. Day. "There are also metals of industrial worth containing enormous quantities of gold. A great part of the sand is made up of magnetic iron, which by a little electric furnace made last year we are able to turn into excellent steel. All along the Pacific coast from Puget sound to the southern end of California this black sand exists in great quantities. It lies in deposits based from the coast and up the headlands, and is washed up by the sea at every high tide, being rolled over and over and thrown out upon the beach. In that sand, if it were separated from the other minerals, there is enough iron to fill Lake Superior and make it solid iron ore. This is the case of the black sand, and it contains only 10 per cent of magnetic iron, and some contain far more. Suppose we had five hundred furnaces situated along that coast, and that each should handle but one hundred tons of ore a day. Altogether they would handle fifty thousand tons of ore, and at three hundred days to the year have an annual output of fifteen million tons, or about one-third as much as the iron product of the whole United States. That would make the Pacific slope one of the great industrial centers of our country, and also the workshop for China, Japan and the remainder of the orient. Indeed the steel tracks for China's new railroads may yet come from the black sands of the Pacific."

Smelting by Electricity.

Dr. Day tells me that these iron sands can be turned into steel by means of electricity at a lower cost than ordinary iron can be smelted with coal. Only a very small amount of coke is needed and the electricity does the work at 50 cents less per ton. This is very important to the Pacific coast, as it is now producing some of the cheapest electricity known to the world. It furnishes it in many places at lower rates than at Niagara, and at as low as seven or eight dollars per horsepower per year. This means that the Pacific slope, with the many streams running down its mountain sides, is just as well off as though it had vast deposits of smelting coal, and that electricity is to make the iron used by the west in the future.

Uncle Sam's Little Furnace at Portland.

During the Portland exposition Uncle Sam at the instance of Dr. Day put up a little furnace there to experiment on these sands. The Canadian government had sent a commission to Europe to report on what is going on there in the reduction of iron by electricity, and it was on the basis of that report that the furnace was made. The man who did the work was an expert named Wilson of the Wilson Aluminum Company.

which has taken out patents for certain electric furnaces. Mr. Wilson arrived in Portland last October, and at the end of one week he had made a furnace which was producing steel from these sands. His furnace turned out good steel in fifty-pound lots the day it began to work, and it had a capacity of making one ton of steel a day. It was, of course, small and experimental, but it worked right along without a hitch. It was run for a month for one thousand dollars, and this included the cost of fuel, electricity, and all labor and cost of operation during that time. To show how quickly it could be rebuilt, the old furnace was dismantled in 230 one afternoon, with everything cold, and within less than three hours they had made a quarter of a ton of steel. The sand used in carrying the electric current was brought from Monterey bay, just below San Francisco. The sand was taken from the beach, run over the concentrating tables to get out the gold and other minerals, then dried, and the magnetic iron in it taken out and run into steel. At the same time the gold in the sand was melted into a button, and all was done before eleven o'clock.

Dr. Day tells me that Uncle Sam's little furnace could be run at a profit for smelting certain kinds of steel, and that for five thousand dollars two furnaces could be run, one for smelting and the other for refining, which would make money right along, day in and day out.

Opportunities for Farmers and Miners.

These new discoveries as to the separation and saving of the metals in the black sands will result in the building up of a part of the coast of Oregon which is now so wild that elk roam the woods and that one can buy a bear skin for fifty cents or a dollar. This is what Dr. Day tells me he paid for skins in the regions. Much of the land is good for farming, but now inaccessible by railroads. Some of it lies along the beach and some on the rivers where there is black sand. In the future, the farmers may own their own land, and the miners may own their own concentrating tables, which they can pile up their iron ore, and in time it will be taken out by the railroad. For a thousand dollars a mining proposition of this kind can be established.

THE CITY'S MUSIC.

Two Later Strains in It That Are Peculiarly Modern and Stirring.

From the New York Sun.

Peculiarly modern among the city's sounds are the resonant rattle of the pneumatic riveters and the incessant purring of the pneumatic stone carving tool, the first coming down to us from the lofty skeleton of some steel frame building under construction and the latter from the stone front of a building upon which men are doing the finishing carving.

Both sounds make music so full of energy and hustle that it may cause men to move faster when they hear it. Let these tools be in use where they can be seen nearby and men will halt at the sound of them to look on. Familiar as they have now become they still seem marvelous, so exultingly does the pneumatic riveter beat the old-time riveting hammer and the pneumatic stone carving tool the old-time mallet and chisel.

Here were carvers, a canvas curtain hung behind them, standing on the sidewalk in front of a new building on lower Broadway, carrying a pattern marked on a course of stone set in the building down there close to the ground; pretty much all stone carving on buildings is done nowadays after the stone has been put in place.

Once the carving was done before the stone was brought to the ground, now they carve capitals, anything, after the stone has been set in the building, and do in days, or in hours, with modern tools, work that used to take weeks.

It was a granite course that these men were at work upon in that building in lower

Broadway, while groups of men stood at the open ends of the curtains hung behind them, and watched the work of the pneumatic riveters and the incessant purring of the pneumatic stone carving tool, the first coming down to us from the lofty skeleton of some steel frame building under construction and the latter from the stone front of a building upon which men are doing the finishing carving.

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Chaka Had Conquered a Large Portion of Africa.

FAMOUS ZULU CHIEFS

Chaka Had Conquered a Large Portion of Africa.

FOUNDED THE BLACK NATION

Death Offering to the Spirit of the King's Mother.

DINGANE AND KETCHWAYO

First and Last Conflicts With the Trekking Boers and Invading English.

Written for The Star.

The major and by far the most interesting portion of the history of the Zulus, a nation of whom have lately been in rebellion against the British, can be studied in the careers of Zululand's three most famous chiefs paramount or kings. These are Chaka, Dingane and Ketchwayo.

Chaka came into power when his people were inferior in the art of war and practice of the bow and arrow to the British. He was a truly great man, and his life was a story of triumph and defeat.

Chaka was the first Zulu to clash with advancing civilization in the persons of the Boers. Ketchwayo fought the British in 1879, his soldiers killed a prince of the house of Napoelon, and when he surrendered the liberty of Zululand passed away forever.

From the time Chaka began to mold the Zulu nation until it became a colony of Great Britain there is a span of less than three-quarters of a century. Yet in this time scores of wars were waged, countless cruelties perpetrated in the name of the kings, Zululand rose, declined and fell as an independent nation.

Chaka was the greatest king of the Zulus. He was the son of Sezeagane, who ruled before him. He was born about 1787.

When he was a young man he was quarreled, and the latter, fearing for the life of himself and son, against whom the king made threats, fled to the Amatsetwa tribe, whose chief, Edingwayo, held the Zulus tributary. Chaka entered the Amatsetwa army and by skill and courage soon raised himself to a position of considerable reputation.

By the time of his father's death he had become a great favorite in his adopted country, his fame had reached Zululand, and so he was called by his own people to be their king. About the same time his protector died and Chaka also became head of his tribe.

Chaka began as a bloody career of war as ever known in lower Africa. With the united Amatsetwa and Zulu armies he began to "smell out" the men of the tribe came under his yoke. Whole regions were depopulated to a man; the birds and beasts of the forest were given more work a day than they could do in a year. In 1822 he had pushed his authority half way across the African continent from the coast and from Umzimvubu, or St. Johns, on the southwest, to Inhambane on the northeast. Tens of thousands must have fallen before him, and he had reached the coast for it was his custom to show no mercy to a defeated army or the inhabitants of villages run across during the course of his campaigns.

But the bloodiest and cruellest of all Chaka's acts was that which marked the death and burial of his mother. In the killing and burning of his mother, a white man of the name of Flynn, who had been rescued from shipwreck by Chaka and favored by the latter's friendship, Mr. Flynn has recorded what he heard and saw:

"As soon as the death was announced the women and the men who were present tore from their persons every description of ornament.

"Chaka now appeared before the hut in which the body lay. For about twenty minutes he stood in silent, mournful attitude. After two or three deep sighs he broke out into fanatic yells.

"This signal was sufficient. The chief and people to the number of about fifteen thousand commenced the most dismal and horrible lamentations. As through the night this continued, none daring to take a rest or to refresh themselves with water.

"The morning dawned, and before noon the number had increased to sixty thousand. The cries became indescribably horrible. Hundreds were lying faint from fatigue, while the carcasses of forty oxen lay in a heap. These had been slaughtered as an offering to the guardian spirits of the tribe.

"At noon the whole force formed a circle, with Chaka in their center, and sang a war song. At the close Chaka ordered the women to be executed on the spot, and the cries became more violent.

"No further orders were needed. The multitude commenced a general massacre. Toward the afternoon I calculated